

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors SH 80 to SH 160 – Forced ventilation

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾			Operating speed during field weakening ¹⁾⁵⁾	Rated power	Rated torque	Static torque	SIMOTICS M-1PH8 asynchronous motor
n_{rated}	n_{max1} ²⁾	n_{max2} ³⁾	n_{max3} ⁴⁾	n_2	P_{rated}	M_{rated}	M_0	
rpm	rpm	rpm	rpm	rpm	kW (HP)	Nm (lb _f -ft)	Nm (lb _f -ft)	
Order No.								
Shaft height 80 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module								
1500	10000	12000	–	6200	2.8 (3.75)	18 (13.3)	21 (15.5)	1PH8083-1 F ■■■-■■■1
2000	10000	15000	17000	11350	3.7 (4.96)	18 (13.3)	21 (15.5)	1PH8083-1 G ■■■-■■■1
3000	10000	15000	20000	17300	4.1 (5.50)	13 (9.59)	21 (15.5)	1PH8083-1 M ■■■-■■■1
4500	10000	15000	20000	20000	4.8 (6.44)	10 (7.38)	19 (14.0)	1PH8083-1 N ■■■-■■■1
1500	10000	14000	–	6750	3.7 (4.96)	24 (17.7)	27 (19.9)	1PH8087-1 F ■■■-■■■1
2000	10000	15000	18000	10450	4.9 (6.57)	23 (17.0)	27 (19.9)	1PH8087-1 G ■■■-■■■1
3000	10000	15000	20000	20000	4.8 (6.44)	15 (11.1)	27 (19.9)	1PH8087-1 M ■■■-■■■1
4500	10000	15000	20000	20000	5.8 (7.78)	12 (8.85)	25 (18.4)	1PH8087-1 N ■■■-■■■1
Shaft height 100 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module								
1500	9000	12000	–	8350	3.7 (4.96)	24 (17.7)	29 (21.4)	1PH8101-1 F ■■■-■■■1
1000	9000	12000	–	3800	3.7 (4.96)	35 (25.8)	38 (28.0)	1PH8103-1 D ■■■-■■■1
1500	9000	12000	–	5200	5.5 (7.38)	35 (25.8)	38 (28.0)	1PH8103-1 F ■■■-■■■1
2000	9000	12000	–	7200	7 (9.39)	33 (24.3)	38 (28.0)	1PH8103-1 G ■■■-■■■1
3000	9000	12000	18000	17100	8.4 (11.3)	27 (19.9)	38 (28.0)	1PH8103-1 M ■■■-■■■1
1500	9000	12000	–	6700	7 (9.39)	45 (33.2)	52 (38.4)	1PH8105-1 F ■■■-■■■1
1000	9000	12000	–	5450	6.3 (8.45)	60 (44.3)	63 (46.5)	1PH8107-1 D ■■■-■■■1
1500	9000	12000	–	6250	9 (12.1)	57 (42.0)	63 (46.5)	1PH8107-1 F ■■■-■■■1
2000	9000	12000	–	7500	10.5 (14.1)	50 (36.9)	63 (46.5)	1PH8107-1 G ■■■-■■■1
3000	9000	12000	18000	18000	12 (16.1)	38 (28.0)	59 (43.5)	1PH8107-1 M ■■■-■■■1
Shaft height 132 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module								
1500	8000	10000	11000	6050	11 (14.8)	70 (51.6)	96 (70.8)	1PH8131-1 F ■■■-■■■1
1000	8000	10000	–	4600	12 (16.1)	115 (84.8)	128 (94.4)	1PH8133-1 D ■■■-■■■1
1500	8000	10000	13000	6900	15 (20.1)	96 (70.8)	126 (92.9)	1PH8133-1 F ■■■-■■■1
2000	8000	10000	15000	6500	20 (26.8)	96 (70.8)	126 (92.9)	1PH8133-1 G ■■■-■■■1
1500	8000	10000	14000	7500	18.5 (24.8)	118 (87.0)	157 (116)	1PH8135-1 F ■■■-■■■1
1000	8000	10000	12000	5400	17 (22.8)	162 (119)	183 (135)	1PH8137-1 D ■■■-■■■1
1500	8000	10000	15000	7000	22 (29.5)	140 (103)	172 (127)	1PH8137-1 F ■■■-■■■1
2000	8000	10000	15000	5500	28 (37.5)	134 (98.8)	176 (130)	1PH8137-1 G ■■■-■■■1
Shaft height 160 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module								
400	6500	–	–	2750	9.5 (12.74)	227 (167.4)	239 (176.3)	1PH8163-1 B ■■■-■■■1
1000	6500	9000	10000	5050	22 (29.50)	210 (154.9)	243 (179.2)	1PH8163-1 D ■■■-■■■1
1500	6500	9000	10000	5000	30 (40.23)	191 (140.9)	252 (185.9)	1PH8163-1 F ■■■-■■■1
2000	6500	9000	10000	3500	36 (48.28)	172 (126.9)	254 (187.4)	1PH8163-1 G ■■■-■■■1
400	6500	–	–	2300	13 (17.43)	310 (228.7)	329 (242.7)	1PH8165-1 B ■■■-■■■1
1000	6500	9000	10000	5550	28 (37.55)	267 (196.9)	302 (222.8)	1PH8165-1 D ■■■-■■■1
1500	6500	9000	10000	4550	37 (49.62)	236 (174.1)	304 (224.2)	1PH8165-1 F ■■■-■■■1
2000	6500	9000	10000	3200	41 (54.98)	196 (144.6)	302 (222.8)	1PH8165-1 G ■■■-■■■1

For versions, see Order No. supplement and options.

The values in the selection and ordering data, particularly for the constant power range with speed n_2 , apply when using an Active Line Module with 400 V 3 AC.
When using a Smart Line Module, proceed according to 1PH8 Motors Configuration Manual.

¹⁾ Speed data are based on an infeed with Active Line Module (see characteristic curves); the maximum speed of the encoders must be observed.

²⁾ Bearing version for Standard (14th data position B to D).

³⁾ Bearing version for Performance (14th data position L).

⁴⁾ Bearing version for High Performance (14th data position M).

⁵⁾ n_2 : max. permissible thermal speed at constant output or speed, which is at the voltage limit when $P = P_{rated}$.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
SH 80 to SH 160 – Forced ventilation

Motor type (repeated)	Efficiency	Moment of inertia	Weight, approx. ⁶⁾	Rated current	Stall current	Terminal box	SINAMICS S120 Motor Module	
	η	J	m	I_{rated}	I_0		Rated output current ⁷⁾	Booksize format
	%	kgm ² (lb _f -in-s ²)	kg (lb)	A	A	Type	I_{rated} A	For additional versions and components, see chapter SINAMICS S120 drive system Order No.
1PH8083-1.F...	80.9	0.0064 (0.06)	32 (70.6)	7.5	8	gk803	9	6SL312-1-TE21-0AA3
1PH8083-1.G...	83.2			11.6	12	gk803	18	6SL312-1-TE21-8AA3
1PH8083-1.M...	86.9			13.6	17	gk803	18	6SL312-1-TE21-8AA3
1PH8083-1.N...	86.4			17	23	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.F...	81.7	0.0089 (0.08)	39 (86.0)	10	11	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.G...	85.3			14.1	15	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.M...	87.1			17.3	23	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.N...	86.8			19.5	28	gk803	30	6SL312-1-TE23-0AA3
1PH8101-1.F...	83.5	0.0138 (0.12)	42 (92.6)	12.5	14	gk813	18	6SL312-1-TE21-8AA3
1PH8103-1.D...	81.4	0.0172 (0.15)	51 (112)	10	11	gk813	18	6SL312-1-TE21-8AA3
1PH8103-1.F...	85.2			13.5	14	gk813	18	6SL312-1-TE21-8AA3
1PH8103-1.G...	87.7			17.5	19	gk813	18	6SL312-1-TE21-8AA3
1PH8103-1.M...	90.0			25.7	31	gk813	30	6SL312-1-TE23-0AA3
1PH8105-1.F...	86.7	0.0252 (0.22)	65 (143)	17.5	20	gk813	18	6SL312-1-TE21-8AA3
1PH8107-1.D...	83.4	0.0289 (0.26)	73 (161)	17.5	25	gk813	18	6SL312-1-TE21-8AA3
1PH8107-1.F...	86.9			23.5	25	gk813	30	6SL312-1-TE23-0AA3
1PH8107-1.G...	89.7			26	29	gk813	30	6SL312-1-TE23-0AA3
1PH8107-1.M...	90.0			38	48	gk813	45	6SL312-1-TE24-5AA3
1PH8131-1.F...	89.9	0.059 (0.52)	89 (196)	24	30	gk833	30	6SL312-1-TE23-0AA3
1PH8133-1.D...	87.1	0.076 (0.67)	106 (234)	30	32	gk833	30	6SL312-1-TE23-0AA3
1PH8133-1.F...	89.9			34	42	gk833	45	6SL312-1-TE24-5AA3
1PH8133-1.G...	91.9			45	54	gk833	45	6SL312-1-TE24-5AA3
1PH8135-1.F...	89.8	0.094 (0.83)	125 (276)	43	53	gk833	45	6SL312-1-TE24-5AA3
1PH8137-1.D...	88.1	0.109 (0.96)	141 (311)	43	47	gk833	45	6SL312-1-TE24-5AA3
1PH8137-1.F...	90.4			56	68	gk833	60	6SL312-1-TE26-0AA3
1PH8137-1.G...	92.4			60	73	gk833	60	6SL312-1-TE26-0AA3
1PH8163-1.B...	82.3	0.216 (1.91)	196 (432)	30	30	gk863	30	6SL312-1-TE23-0AA3
1PH8163-1.D...	90.9	0.216 (1.91)	196 (432)	55	60	gk863	60	6SL312-1-TE26-0AA3
1PH8163-1.F...	92.3	0.216 (1.91)	196 (432)	71	87	gk863	85	6SL312-1-TE28-5AA3
1PH8163-1.G...	92.9	0.216 (1.91)	196 (432)	83	111	gk863	85	6SL312-1-TE28-5AA3
1PH8165-1.B...	82.6	0.232 (2.83)	230 (507)	36	37	gk863	45	6SL312-1-TE24-5AA3
1PH8165-1.D...	91.4	0.232 (2.83)	230 (507)	71	77	gk863	85	6SL312-1-TE28-5AA3
1PH8165-1.F...	92.6	0.232 (2.83)	230 (507)	78	95	gk863	85	6SL312-1-TE28-5AA3
1PH8165-1.G...	92.7	0.232 (2.83)	230 (507)	88	122	gk863	85 ⁸⁾	6SL312-1-TE28-5AA3
							Cooling:	
							Internal air cooling	0
							External air cooling	1
							Motor Module:	
							Single Motor Module	1
							Double Motor Module	2

⁶⁾ Extra weight for version with hollow shaft approx. 2.5 kg (5.51 lb).⁷⁾ Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz.⁸⁾ The rated output current of the Motor Module is lower than the rated motor current at 4 kHz.

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors SH 100/SH 132 – Forced ventilation

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾			Operating speed during field weakening ¹⁾⁵⁾	Rated power	Rated torque	Static torque	SIMOTICS M-1PH8 asynchronous motor
Y/Δ	Y/Δ	Y/Δ	Δ	Y/Δ	Y/Δ	Y/Δ	Y/Δ	
n_{rated}	n_{max1} ²⁾	n_{max2} ³⁾	n_{max3} ⁴⁾	n_2	P_{rated}	M_{rated}	M_0	
rpm	rpm	rpm	rpm	rpm	kW (HP)	Nm (lb _F -ft)	Nm (lb _F -ft)	
Shaft height 100 – Forced ventilation – Star delta circuit – Line voltage 400 V 3 AC, operation on Active Line Module								
2000/5000	9000	12000	18000	8950/10000	4.9/4.9 (6.57/6.57)	23/9 (17.0/6.64)	29/19 (21.4/14.0)	1PH8101-1 ■S■■-■■■1
	9000	12000	18000	7650/10000	10/9.3 (13.4/12.5)	48/18 (35.4/13.3)	55/36 (40.6/26.6)	1PH8105-1 ■S■■-■■■1
	9000	12000	18000	8550/10000	11/11 (14.8/14.8)	53/21 (39.1/15.5)	63/42 (46.5/31.0)	1PH8107-1 ■S■■-■■■1
Shaft height 132 – Forced ventilation – Star delta circuit – Line voltage 400 V 3 AC, operation on Active Line Module								
2000/5000	8000	10000	15000	8000/10000	14.6/14.6 (19.6/19.6)	70/28 (51.6/20.7)	94/55 (69.3/40.6)	1PH8131-1 ■S■■-■■■1
	8000	10000	15000	6500/10000	24.5/24.5 (32.9/32.9)	117/47 (86.3/34.7)	157/94 (116/69.3)	1PH8135-1 ■S■■-■■■1
	8000	10000	15000	3000/6000	29/27.5 (38.9/36.9)	138/53 (102/39.1)	185/105 (136/77.4)	1PH8137-1 ■S■■-■■■1

For versions, see Order No. supplement and options.

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The values in the selection and ordering data, particularly for the constant power range with speed n_2 , apply when using an Active Line Module with 400 V 3 AC.
When using a Smart Line Module, proceed according to 1PH8 Motors Configuration Manual.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
SH 100/SH 132 – Forced ventilation

Motor type (repeated)	Efficiency	Moment of inertia	Weight, approx. ⁶⁾	Rated current	Stall current	Terminal box	SINAMICS S120 Motor Module	
	Y/Δ			Y/Δ	Y/Δ		Rated output current ⁷⁾	Booksiz format
	η	J	m	I_{rated}	I_0		I_{rated}	For additional versions and components, see chapter SINAMICS S120 drive system
	%	kgm ² (lb _f -in-s ²)	kg (lb)	A	A	Type	A	Order No.
1PH8101-1.S...	87.2/90.2	0.0138 (0.12)	42 (92.6)	13.2/13.5	15/20	gk826	18	6SL312-1 TE21-8AA3
1PH8105-1.S...	89.1/91.4	0.0252 (0.22)	65 (143)	23/24	25/34	gk826	30	6SL312-1 TE23-0AA3
1PH8107-1.S...	89.4/90.9	0.0289 (0.26)	73 (161)	26.7/28	30/40	gk826	30	6SL312-1 TE23-0AA3
1PH8131-1.S...	90.8/89.7	0.059 (0.52)	89 (196)	39/40	47/56	gk846	45	6SL312-1 TE24-5AA3
1PH8135-1.S...	91.7/93.9	0.094 (0.83)	125 (276)	51/52	62/78	gk846	60	6SL312-1 TE26-0AA3
1PH8137-1.S...	93.1/91.9	0.109 (0.96)	141 (311)	56/56	68/87	gk846	60	6SL312-1 TE26-0AA3
							Cooling:	
							Internal air cooling	0
							External air cooling	1
							Motor Module:	
							Single Motor Module	1
							Double Motor Module	2

¹⁾ Speed data are based on an infeed with Active Line Module (see characteristic curves); the maximum speed of the encoders must be observed.

²⁾ Bearing version for Standard (14th data position B to D).

³⁾ Bearing version for Performance (14th data position L).

⁴⁾ Bearing version for high performance (14th data position M).

⁵⁾ n_2 : max. permissible thermal speed at constant output or speed, which is at the voltage limit when $P = P_{rated}$.

⁶⁾ Extra weight for version with hollow shaft approx. 2.5 kg (5.51 lb).

⁷⁾ Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz.

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors SH 180 to SH 280 – Forced ventilation

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾		Operating speed during field weakening ¹⁴⁾	Rated power	Rated torque	Static torque	SIMOTICS M-1PH8 asynchronous motor
n_{rated}	n_{max1} ²⁾	n_{max2} ³⁾	n_2	P_{rated}	M_{rated}	M_0	
rpm	rpm	rpm	rpm	kW (HP)	Nm (lb _r -ft)	Nm (lb _r -ft)	
Order No.							
Shaft height 180 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module							
400	5000	7500	3700	16.3 (21.9)	389 (287)	389 (287)	1PH8184-1 B ■ ■ ■ ■ ■ 1
700	5000	7500	4300	27 (36.2)	368 (271)	368 (271)	1PH8184-1 C ■ ■ ■ ■ ■ 1
1000	5000	7500	5100	39 (52.3)	372 (274)	372 (274)	1PH8184-1 D ■ ■ ■ ■ ■ 1
1500	5000	7500	5600	51 (68.4)	325 (240)	325 (240)	1PH8184-1 F ■ ■ ■ ■ ■ 1
2500	5000	7500	5100	78 (104.6)	298 (220)	298 (220)	1PH8184-1 L ■ ■ ■ ■ ■ 1
400	5000	7500	4100	21.2 (28.4)	506 (373)	506 (373)	1PH8186-1 B ■ ■ ■ ■ ■ 1
700	5000	7500	4700	35 (46.9)	478 (353)	478 (353)	1PH8186-1 C ■ ■ ■ ■ ■ 1
1000	5000	7500	5400	51 (68.4)	487 (359)	487 (359)	1PH8186-1 D ■ ■ ■ ■ ■ 1
1500	5000	7500	5400	74 (99.2)	471 (347)	471 (347)	1PH8186-1 F ■ ■ ■ ■ ■ 1
2500	5000	7500	5000	106 (142.1)	405 (299)	405 (299)	1PH8186-1 L ■ ■ ■ ■ ■ 1
Shaft height 225 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module							
400	4500	6000	3100	30.4 (40.8)	726 (535)	726 (535)	1PH8224-1 B ■ ■ ■ ■ ■ 1
700	4500	6000	3900	55 (73.8)	750 (553)	750 (553)	1PH8224-1 C ■ ■ ■ ■ ■ 1
1000	4500	6000	4400	71 (95.2)	678 (500)	678 (500)	1PH8224-1 D ■ ■ ■ ■ ■ 1
1500	4500	6000	4400	95 (127.4)	605 (446)	605 (446)	1PH8224-1 F ■ ■ ■ ■ ■ 1
2500	4500	6000	3400	142 (190.4)	542 (400)	542 (400)	1PH8224-1 L ■ ■ ■ ■ ■ 1
400	4500	6000	3500	39.2 (52.6)	936 (690)	936 (690)	1PH8226-1 B ■ ■ ■ ■ ■ 1
700	4500	6000	4300	68 (91.2)	928 (684)	928 (684)	1PH8226-1 C ■ ■ ■ ■ ■ 1
1000	4500	6000	5800	92 (123.4)	879 (648)	879 (648)	1PH8226-1 D ■ ■ ■ ■ ■ 1
1500	4500	6000	3500	130 (174.3)	828 (611)	828 (611)	1PH8226-1 F ■ ■ ■ ■ ■ 1
2500	4500	6000	3500	168 (225.3)	642 (474)	642 (474)	1PH8226-1 L ■ ■ ■ ■ ■ 1
400	4500	6000	3600	48 (64.4)	1146 (845)	1146 (845)	1PH8228-1 B ■ ■ ■ ■ ■ 1
700	4500	6000	4300	82 (110)	1119 (825)	1119 (825)	1PH8228-1 C ■ ■ ■ ■ ■ 1
1000	4500	6000	4200	113 (151.5)	1079 (796)	1079 (796)	1PH8228-1 D ■ ■ ■ ■ ■ 1
1500	4500	6000	4200	160 (214.6)	1019 (752)	1019 (752)	1PH8228-1 F ■ ■ ■ ■ ■ 1
2500	4500	6000	3400	205 (274.9)	783 (578)	783 (578)	1PH8228-1 L ■ ■ ■ ■ ■ 1
Shaft height 280 – Forced ventilation – Line voltage 400 V 3 AC, operation on Active Line Module							
400	3300	–	2100	63 (84.5)	1504 (1109)	1504 (1109)	1PH8284-1 B ■ ■ ■ ■ ■ 1
700	3300	–	3000	110 (147.5)	1501 (1107)	1501 (1107)	1PH8284-1 C ■ ■ ■ ■ ■ 1
1000	3300	–	3300	150 (201.2)	1433 (1057)	1433 (1057)	1PH8284-1 D ■ ■ ■ ■ ■ 1
1500	3300	–	3100	196 (262.8)	1248 (921)	1248 (921)	1PH8284-1 F ■ ■ ■ ■ ■ 1
400	3300	–	2100	80 (107.3)	1910 (1409)	1910 (1409)	1PH8286-1 B ■ ■ ■ ■ ■ 1
700	3300	–	3000	138 (185.1)	1883 (1389)	1883 (1389)	1PH8286-1 C ■ ■ ■ ■ ■ 1
1000	3300	–	3300	182 (244.1)	1738 (1282)	1738 (1282)	1PH8286-1 D ■ ■ ■ ■ ■ 1
1500	3300	–	2700	250 (335.3)	1592 (1174)	1592 (1174)	1PH8286-1 F ■ ■ ■ ■ ■ 1
400	3300	–	2100	103 (138.1)	2459 (1814)	2459 (1814)	1PH8288-1 B ■ ■ ■ ■ ■ 1
700	3300	–	3100	166 (222.6)	2265 (1671)	2268 (1673)	1PH8288-1 C ■ ■ ■ ■ ■ 1
1000	3300	–	3300	226 (303.1)	2158 (1592)	2158 (1592)	1PH8288-1 D ■ ■ ■ ■ ■ 1

For versions, see Order No. supplement and options.

The values in the selection and ordering data, particularly for the constant power range with speed n_2 , apply when using an Active Line Module with 400 V 3 AC.

When using a Smart Line Module, proceed according to 1PH8 Motors Configuration Manual.

¹⁾ Speed data are based on an infeed with Active Line Module (see characteristic curves); the maximum speed of the encoders must be observed.

²⁾ Bearing version for Standard (14th data position B to D).

³⁾ Bearing version for Performance (14th data position L).

⁴⁾ n_2 : max. permissible thermal speed at constant output or speed, which is at the voltage limit when $P = P_{rated}$.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
SH 180 to SH 280 – Forced ventilation

Motor type (repeated)	Efficiency	Moment of inertia	Weight, approx.	Rated current	Stall current	Terminal box	SINAMICS S120 Motor Module	
	η	J	m	I_{rated}	I_0		Rated output current ⁵⁾	For additional versions and components, see chapter SINAMICS S120 drive system
	%	kgm ² (lb _r -in-s ²)	kg (lb)	A	A	Type	I_{rated} A	Order No.
1PH8184-1.B...	83.4	0.489 (4.33)	350 (772)	49	49	1XB7322	60	6SL312-1 TE26-0AA3
1PH8184-1.C...	88.9	0.489 (4.33)	350 (772)	65	65	1XB7322	85	6SL312-1 TE28-5AA3
1PH8184-1.D...	92.0	0.489 (4.33)	350 (772)	87	87	1XB7322	85 ⁶⁾	6SL312-1 TE28-5AA3
1PH8184-1.F...	94.0	0.489 (4.33)	350 (772)	116	116	1XB7322	132	6SL312-1 TE31-3AA3
1PH8184-1.L...	95.2	0.489 (4.33)	350 (772)	166	166	1XB7322	200	6SL312-1 TE32-0AA3
1PH8186-1.B...	85.0	0.652 (5.77)	422 (931)	65	65	1XB7322	85	6SL312-1 TE28-5AA3
1PH8186-1.C...	90.9	0.652 (5.77)	422 (931)	83	83	1XB7322	85	6SL312-1 TE28-5AA3
1PH8186-1.D...	92.6	0.652 (5.77)	422 (931)	112	112	1XB7322	132	6SL312-1 TE31-3AA3
1PH8186-1.F...	94.5	0.652 (5.77)	422 (931)	166	166	1XB7322	200	6SL312-1 TE32-0AA3
1PH8186-1.L...	95.5	0.652 (5.77)	422 (931)	230	230	1XB7422	260	6SL312-1 TE32-6AA3
1PH8224-1.B...	87.2	1.48 (13.10)	610 (1345)	86	86	1XB7322	85 ⁶⁾	6SL312-1 TE28-5AA3
1PH8224-1.C...	92.5	1.48 (13.10)	610 (1345)	136	136	1XB7322	132 ⁶⁾	6SL312-1 TE31-3AA3
1PH8224-1.D...	94.2	1.48 (13.10)	610 (1345)	158	158	1XB7322	200	6SL312-1 TE32-0AA3
1PH8224-1.F...	95.3	1.48 (13.10)	610 (1345)	200	200	1XB7322	200	6SL312-1 TE32-0AA3
1PH8224-1.L...	95.8	1.48 (13.10)	610 (1345)	295	295	1XB7700	310	6SL332-1 TE33-1AA3
1PH8226-1.B...	88.7	1.93 (17.08)	740 (1632)	112	112	1XB7322	132	6SL312-1 TE31-3AA3
1PH8226-1.C...	93.2	1.93 (17.08)	740 (1632)	162	162	1XB7322	200	6SL312-1 TE32-0AA3
1PH8226-1.D...	94.4	1.93 (17.08)	740 (1632)	194	194	1XB7322	200	6SL312-1 TE32-0AA3
1PH8226-1.F...	95.7	1.93 (17.08)	740 (1632)	270	270	1XB7422	310	6SL332-1 TE33-1AA3
1PH8226-1.L...	96.1	1.93 (17.08)	740 (1632)	350	350	1XB7700	380	6SL332-1 TE33-8AA3
1PH8228-1.B...	89.6	2.33 (20.62)	870 (1918)	132	132	1XB7322	132	6SL312-1 TE31-3AA3
1PH8228-1.C...	93.3	2.33 (20.62)	870 (1918)	188	188	1XB7322	200	6SL312-1 TE32-0AA3
1PH8228-1.D...	94.8	2.33 (20.62)	870 (1918)	235	235	1XB7422	260	6SL312-1 TE32-6AA3
1PH8228-1.F...	95.9	2.33 (20.62)	870 (1918)	340	340	1XB7700	380	6SL332-1 TE33-8AA3
1PH8228-1.L...	96.3	2.33 (20.62)	870 (1918)	420	420	1XB7700	490	6SL332-1 TE35-0AA3
1PH8284-1.B...	92.4	4.20 (37.17)	1200 (2646)	154	154	1XB7700	200	6SL312-1 TE32-0AA3
1PH8284-1.C...	94.7	4.20 (37.17)	1200 (2646)	240	240	1XB7700	260	6SL332-1 TE32-6AA3
1PH8284-1.D...	95.8	4.20 (37.17)	1200 (2646)	315	315	1XB7700	310 ⁶⁾	6SL332-1 TE33-1AA3
1PH8284-1.F...	96.3	4.20 (37.17)	1200 (2646)	390	390	1XB7700	490	6SL332-1 TE35-0AA3
1PH8286-1.B...	92.8	5.20 (46.03)	1400 (3087)	186	186	1XB7700	200	6SL312-1 TE32-0AA3
1PH8286-1.C...	94.9	5.20 (46.03)	1400 (3087)	295	295	1XB7700	310	6SL332-1 TE33-1AA3
1PH8286-1.D...	96.0	5.20 (46.03)	1400 (3087)	410	410	1XB7700	490	6SL332-1 TE35-0AA3
1PH8286-1.F...	96.5	5.20 (46.03)	1400 (3087)	490	490	1XB7700	490	6SL332-1 TE35-0AA3
1PH8288-1.B...	93.1	6.30 (55.76)	1650 (3638)	245	245	1XB7700	260	6SL332-1 TE32-6AA3
1PH8288-1.C...	95.3	6.30 (55.76)	1650 (3638)	365	365	1XB7700	380	6SL332-1 TE33-8AA3
1PH8288-1.D...	96.2	6.30 (55.76)	1650 (3638)	495	495	1XB7700	490 ⁶⁾	6SL332-1 TE35-0AA3

Format:	
Booksize	1
Chassis	3
Cooling:	
Internal air cooling	0
External air cooling	1
Motor Module:	
Single Motor Module	1

⁵⁾ Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz or 2 kHz.

⁶⁾ The rated output current of the Motor Module is lower than the rated motor current at 4 kHz or 2 kHz.

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors SH 80 to SH 160 – Water cooling

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾			Operating speed during field weakening ¹⁾⁵⁾	Rated power	Rated torque	Static torque	SIMOTICS M-1PH8 asynchronous motor	
n_{rated}	n_{max1} ²⁾	n_{max2} ³⁾	n_{max3} ⁴⁾	n_2	P_{rated}	M_{rated}	M_0		
rpm	rpm	rpm	rpm	rpm	kW (HP)	Nm (lb _F -ft)	Nm (lb _F -ft)		Order No.
Shaft height 80 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module									
1500	10000	12000	–	4850	3.5 (4.69)	22 (16.2)	23 (17.0)	1PH8083-1 F2 ■■■■1	
2000	10000	15000	16000	9150	4.3 (5.77)	21 (15.5)	23 (17.0)	1PH8083-1 G2 ■■■■1	
4500	10000	15000	20000	18950	6.7 (8.98)	14 (10.3)	23 (17.0)	1PH8083-1 N2 ■■■■1	
1500	10000	15000	–	7700	4.6 (6.17)	29 (21.4)	34 (25.1)	1PH8087-1 F2 ■■■■1	
2000	10000	15000	19000	10000	6.1 (8.18)	29 (21.4)	34 (25.1)	1PH8087-1 G2 ■■■■1	
4500	10000	15000	20000	20000	8.5 (11.4)	18 (13.3)	27 (19.9)	1PH8087-1 N2 ■■■■1	
Shaft height 100 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module									
1500	9000	–	–	4200	5 (6.7)	32 (24)	34 (25.1)	1PH8101-1 F2 ■■■■1	
2000	9000	12000	–	6800	6.4 (8.58)	31 (22.9)	34 (25.1)	1PH8101-1 G2 ■■■■1	
1500	9000	–	–	6400	7.1 (9.5)	45 (33.2)	48 (35.4)	1PH8103-1 F2 ■■■■1	
2000	9000	12000	–	5300	9.5 (12.7)	45 (33.2)	48 (35.4)	1PH8103-1 G2 ■■■■1	
3000	9000	12000	18000	14600	10.6 (14.2)	34 (25.1)	46 (33.9)	1PH8103-1 M2 ■■■■1	
1500	9000	–	–	5000	11 (14.8)	70 (51.6)	74 (54.6)	1PH8105-1 F2 ■■■■1	
2000	9000	12000	–	6750	13 (17.4)	62 (45.7)	74 (54.6)	1PH8105-1 G2 ■■■■1	
3000	9000	12000	18000	11700	16.8 (22.5)	53 (39.1)	71 (52.4)	1PH8105-1 M2 ■■■■1	
1500	9000	12000	–	6400	14 (18.8)	89 (65.6)	94 (69.3)	1PH8107-1 F2 ■■■■1	
3000	9000	12000	18000	18050	18 (24.1)	57 (42.0)	82 (60)	1PH8107-1 M2 ■■■■1	
Shaft height 132 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module									
1500	8000	10000	11000	3200	15 (20.1)	96 (70.8)	96 (70.8)	1PH8131-1 F2 ■■■■1	
2000	8000	10000	14000	5500	18 (24.1)	86 (63.4)	101 (74.5)	1PH8131-1 G2 ■■■■1	
1500	8000	10000	13000	4500	17 (22.8)	108 (79.7)	136 (100)	1PH8133-1 F2 ■■■■1	
2000	8000	10000	15000	7000	22 (29.5)	105 (77.4)	134 (98.8)	1PH8133-1 G2 ■■■■1	
1500	8000	10000	14000	5250	22 (29.5)	140 (103)	172 (127)	1PH8135-1 F2 ■■■■1	
2000	8000	10000	15000	5250	29 (38.9)	138 (102)	170 (125)	1PH8135-1 G2 ■■■■1	
1500	8000	10000	15000	6500	27 (36.2)	172 (127)	202 (149)	1PH8137-1 F2 ■■■■1	
1500	8000	10000	15000	7000	30 (40.2)	191 (141)	223 (164)	1PH8138-1 F2 ■■■■1	
Shaft height 160 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module									
1500	6500	9000	10000	5000	37 (49.6)	236 (174)	288 (212.4)	1PH8163-1 F2 ■■■■1	
2000	6500	9000	10000	5800	42 (56.3)	201 (148)	281 (207.3)	1PH8163-1 G2 ■■■■1	
1500	6500	9000	10000	4150	46 (61.7)	293 (216)	334 (246.4)	1PH8165-1 F2 ■■■■1	
2000	6500	9000	10000	3900	53 (71.1)	253 (187)	306 (225.7)	1PH8165-1 G2 ■■■■1	
1500	6500	9000	10000	4050	52 (69.7)	331 (244)	353 (260.4)	1PH8166-1 F2 ■■■■1	
2000	6500	9000	10000	4000	64 (85.8)	306 (225.7)	353 (260.4)	1PH8166-1 G2 ■■■■1	

For versions, see Order No. supplement and options.

The values in the selection and ordering data, particularly for the constant power range with speed n_2 , apply when using an Active Line Module with 400 V 3 AC.
When using a Smart Line Module, proceed according to 1PH8 Motors Configuration Manual.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
SH 80 to SH 160 – Water cooling

Motor type (repeated)	Efficiency	Moment of inertia	Weight, approx. ⁶⁾	Rated current	Stall current	Terminal box	SINAMICS S120 Motor Module	
	η	J	m	I_{rated}	I_0		Rated output current ⁷⁾	Booksiz format
	%	kgm ² (lb _F -in-s ²)	kg (lb)	A	A	Type	I_{rated}	For additional versions and components, see chapter SINAMICS S120 drive system
							A	Order No.
1PH8083-1.F2...	78.4	0.0064 (0.06)	36 (79.4)	8.9	9	gk803	9	6SL312-1-TE21-0AA3
1PH8083-1.G2...	83.3			12.0	13	gk803	18	6SL312-1-TE21-8AA3
1PH8083-1.N2...	87.7			18.0	23	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.F2...	81.4	0.0089 (0.08)	44 (97.0)	13.7	15	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.G2...	84.3			17.5	19	gk803	18	6SL312-1-TE21-8AA3
1PH8087-1.N2...	89.1			24.0	31	gk803	30	6SL312-1-TE23-0AA3
1PH8101-1.F2...	81.3	0.0138 (0.12)	51 (113)	12.8	13	gk823	18	6SL312-1-TE21-8AA3
1PH8101-1.G2...	85.7			16.8	18	gk803	18	6SL312-1-TE21-8AA3
1PH8103-1.F2...	82.7	0.0172 (0.15)	60 (132)	19.7	20	gk823	30	6SL312-1-TE23-0AA3
1PH8103-1.G2...	85.7			23.8	24	gk823	30	6SL312-1-TE23-0AA3
1PH8103-1.M2...	90.0			30	35	gk823	30	6SL312-1-TE23-0AA3
1PH8105-1.F2...	84.3	0.0252 (0.22)	74 (163)	28.5	29	gk823	30	6SL312-1-TE23-0AA3
1PH8105-1.G2...	87.9			34.5	38	gk823	45	6SL312-1-TE24-5AA3
1PH8105-1.M2...	90.0			45	52	gk823	45	6SL312-1-TE24-5AA3
1PH8107-1.F2...	82.9	0.0289 (0.26)	83 (183)	43.7	44	gk823	45	6SL312-1-TE24-5AA3
1PH8107-1.M2...	90.0			60	73	gk823	60	6SL312-1-TE26-0AA3
1PH8131-1.F2...	88.3	0.059 (0.52)	105 (232)	30	30	gk843	30	6SL312-1-TE23-0AA3
1PH8131-1.G2...	90.8			40	44	gk843	45	6SL312-1-TE24-5AA3
1PH8133-1.F2...	89.7	0.076 (0.67)	123 (271)	38	45	gk843	45	6SL312-1-TE24-5AA3
1PH8133-1.G2...	90.9			52	61	gk843	60	6SL312-1-TE26-0AA3
1PH8135-1.F2...	90.1	0.094 (0.83)	141 (311)	51	58	gk843	60	6SL312-1-TE26-0AA3
1PH8135-1.G2...	92.4			64	73	gk843	85	6SL312-1-TE28-5AA3
1PH8137-1.F2...	90.0	0.109 (0.96)	157 (346)	67	73	gk843	85	6SL312-1-TE28-5AA3
1PH8138-1.F2...	88.2	0.109 (0.96)	160 (353)	80	88	gk843	85	6SL312-1-TE28-5AA3
1PH8163-1.F2...	91.6	0.216 (1.91)	229 (505)	84	96	gk873	85	6SL312-1-TE28-5AA3
1PH8163-1.G2...	93.7	0.216 (1.91)	229 (505)	93	120	gk873	132	6SL312-1-TE31-3AA3
1PH8165-1.F2...	93.0	0.232 (2.05)	264 (582)	104	112	gk873	132	6SL312-1-TE31-3AA3
1PH8165-1.G2...	93.8	0.232 (2.05)	264 (582)	110	135	gk873	132	6SL312-1-TE31-3AA3
1PH8166-1.F2...	93.6	0.232 (2.05)	269 (593)	116	127	gk873	132	6SL312-1-TE31-3AA3
1PH8166-1.G2...	93.7	0.232 (2.05)	269 (593)	125	147	gk873	132	6SL312-1-TE31-3AA3

Cooling:

Internal air cooling
External air cooling0
1

Motor Module:

Single Motor Module
Double Motor Module1
2

1) Speed data are based on an infeed with Active Line Module (see characteristic curves); the maximum speed of the encoders must be observed.

2) Bearing version for Standard (14th data position B to D).

3) Bearing version for Performance (14th data position L).

4) Bearing version for High-Performance (14th data position M).

5) n_2 : max. permissible thermal speed at constant output or speed, which is at the voltage limit when $P = P_{rated}$.

6) Extra weight for version with hollow shaft approx. 2.5 kg (5.51 lb).

7) Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz.

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors SH 180 to SH 280 – Water cooling

Selection and ordering data

Rated speed	Continuous speed, max. ¹⁾		Operating speed during field weakening ¹⁾⁴⁾	Rated power	Rated torque	Static torque	SIMOTICS M-1PH8 asynchronous motor
n_{rated}	$n_{max1}^{2)}$	$n_{max2}^{3)}$	n_2	P_{rated}	M_{rated}	M_0	
rpm	rpm	rpm	rpm	kW (HP)	Nm (lb _f -ft)	Nm (lb _f -ft)	
Shaft height 180 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module							
400	5000	7500	2500	17 (22.8)	406 (299)	406 (299)	1PH8184-1 B2 ■■■1
700	5000	7500	3300	33 (44.3)	450 (332)	450 (332)	1PH8184-1 C2 ■■■1
1000	5000	7500	5500	47 (63)	449 (331)	449 (331)	1PH8184-1 D2 ■■■1
1500	5000	7500	5000	70 (93.9)	446 (329)	446 (329)	1PH8184-1 F 2 ■■■1
2500	5000	7500	5700	95 (127)	363 (268)	363 (268)	1PH8184-1 L 2 ■■■1
400	5000	7500	2900	23 (30.8)	549 (405)	549 (405)	1PH8186-1 B2 ■■■1
700	5000	7500	3900	43 (57.7)	587 (433)	587 (433)	1PH8186-1 C2 ■■■1
1000	5000	7500	6000	64 (85.8)	611 (451)	611 (451)	1PH8186-1 D2 ■■■1
1500	5000	7500	6000	93 (125)	592 (437)	592 (437)	1PH8186-1 F 2 ■■■1
2500	5000	7500	5700	120 (161)	458 (338)	458 (338)	1PH8186-1 L 2 ■■■1
Shaft height 225 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module							
400	4500	6000	1750	36 (48.3)	860 (634)	860 (634)	1PH8224-1 B2 ■■■1
700	4500	6000	2500	61 (81.8)	832 (614)	832 (614)	1PH8224-1 C2 ■■■1
1000	4500	6000	3700	89 (119)	850 (627)	850 (627)	1PH8224-1 D2 ■■■1
1500	4500	6000	4600	119 (160)	758 (559)	758 (559)	1PH8224-1 F 2 ■■■1
2500	4500	6000	4500	153 (205)	584 (431)	584 (431)	1PH8224-1 L 2 ■■■1
400	4500	6000	2000	47 (63)	1122 (828)	1122 (828)	1PH8226-1 B2 ■■■1
700	4500	6000	2700	81 (109)	1105 (815)	1105 (815)	1PH8226-1 C2 ■■■1
1000	4500	6000	3500	115 (154)	1098 (810)	1098 (810)	1PH8226-1 D2 ■■■1
1500	4500	6000	4500	145 (194)	923 (681)	923 (681)	1PH8226-1 F 2 ■■■1
2500	4500	6000	4500	185 (248)	707 (521)	707 (521)	1PH8226-1 L 2 ■■■1
400	4500	6000	2100	58 (77.8)	1385 (1022)	1385 (1022)	1PH8228-1 B2 ■■■1
700	4500	6000	2850	96 (129)	1310 (966)	1310 (966)	1PH8228-1 C2 ■■■1
1000	4500	6000	2350	141 (189)	1347 (994)	1347 (994)	1PH8228-1 D2 ■■■1
1500	4500	6000	4500	192 (257)	1222 (901)	1222 (901)	1PH8228-1 F 2 ■■■1
2500	4500	6000	4500	226 (303)	863 (637)	863 (637)	1PH8228-1 L 2 ■■■1
Shaft height 280 – Water cooling – Line voltage 400 V 3 AC, operation on Active Line Module							
400	3300	–	3100	71 (95.2)	1695 (1250)	1695 (1250)	1PH8284-1 B2 ■■■1
700	3300	–	3100	123 (165)	1678 (1238)	1678 (1238)	1PH8284-1 C2 ■■■1
1000	3300	–	2800	172 (231)	1643 (1212)	1643 (1212)	1PH8284-1 D2 ■■■1
1500	3300	–	2700	227 (304)	1445 (1066)	1445 (1066)	1PH8284-1 F 2 ■■■1
400	3300	–	3300	89 (119)	2125 (1567)	2125 (1567)	1PH8286-1 B2 ■■■1
700	3300	–	3100	153 (205)	2087 (1539)	2087 (1539)	1PH8286-1 C2 ■■■1
1000	3300	–	2800	214 (287)	2044 (1508)	2044 (1508)	1PH8286-1 D2 ■■■1
400	3300	–	3300	109 (146)	2602 (1919)	2602 (1919)	1PH8288-1 B2 ■■■1
700	3300	–	3100	188 (252)	2565 (1892)	2565 (1892)	1PH8288-1 C2 ■■■1

For versions, see Order No. supplement and options.

The values in the selection and ordering data, particularly for the constant power range with speed n_2 , apply when using an Active Line Module with 380 V 3 AC.
When using a Smart Line Module, proceed according to 1PH8 Motors Configuration Manual.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
SH 180 to SH 280 – Water cooling

Motor type (repeated)	Efficiency	Moment of inertia	Weight, approx.	Rated current	Stall current	Terminal box	SINAMICS S120 Motor Module	
	η	J	m	I_{rated}	I_0		Rated output current ⁵⁾	For additional versions and components, see chapter SINAMICS S120 drive system
	%	kgm ² (lb _r -in-s ²)	kg (lb)	A	A	Type	A	Order No.
1PH8184-1.B2...	83.1	0.489 (4.33)	340 (750)	50	50	1XB7322-P05	60	6SL312-1TE26-0AA3
1PH8184-1.C2...	87.2			77	77	1XB7322-P05	85	6SL312-1TE28-5AA3
1PH8184-1.D2...	90.4			114	114	1XB7322-P05	132	6SL312-1TE31-3AA3
1PH8184-1.F2...	92.8			150	150	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8184-1.L2...	94.5			196	196	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8186-1.B2...	84.5	0.652 (5.77)	410 (904)	68	68	1XB7322-P05	85	6SL312-1TE28-5AA3
1PH8186-1.C2...	89.8			97	97	1XB7322-P05	132	6SL312-1TE31-3AA3
1PH8186-1.D2...	92.0			148	148	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8186-1.F2...	93.5			198	198	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8186-1.L2...	94.8			250	250	1XB7422-P06	260	6SL3320-1TE32-6AA3
1PH8224-1.B2...	85.8	1.45 (12.83)	610 (1345)	100	100	1XB7322-P05	132	6SL312-1TE31-3AA3
1PH8224-1.C2...	91.4			128	128	1XB7322-P05	132	6SL312-1TE31-3AA3
1PH8224-1.D2...	93.7			188	188	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8224-1.F2...	95.1			240	240	1XB7422-P06	260	6SL3320-1TE32-6AA3
1PH8224-1.L2...	96.1			310	310	1XB7700-P02	310	6SL3320-1TE33-1AA3
1PH8226-1.B2...	87.5	1.90 (16.82)	740 (1632)	130	130	1XB7322-P05	132	6SL312-1TE31-3AA3
1PH8226-1.C2...	92.8			184	184	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8226-1.D2...	93.8			235	235	1XB7422-P06	260	6SL3320-1TE32-6AA3
1PH8226-1.F2...	95.7			295	295	1XB7700-P02	310	6SL3320-1TE33-1AA3
1PH8226-1.L2...	96.3			380	380	1XB7700-P02	380	6SL3320-1TE33-8AA3
1PH8228-1.B2...	88.6	2.35 (20.8)	870 (1918)	154	154	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8228-1.C2...	93.0			210	210	1XB7322-P05	210	6SL3320-1TE32-1AA3
1PH8228-1.D2...	94.3			280	280	1XB7700-P02	310	6SL3320-1TE33-1AA3
1PH8228-1.F2...	95.9			390	390	1XB7700-P02	380 ⁶⁾	6SL3320-1TE33-8AA3
1PH8228-1.L2...	96.4			455	455	1XB7700-P02	490	6SL3320-1TE35-0AA3
1PH8284-1.B2...	91.4	4.21 (37.26)	1280 (2822)	170	170	1XB7322-P05	200	6SL312-1TE32-0AA3
1PH8284-1.C2...	94.5			260	260	1XB7700-P02	260	6SL3320-1TE32-6AA3
1PH8284-1.D2...	95.7			350	350	1XB7700-P02	380	6SL3320-1TE33-8AA3
1PH8284-1.F2...	96.4			445	445	1XB7700-P02	490	6SL3320-1TE35-0AA3
1PH8286-1.B2...	91.6	5.16 (45.67)	1490 (3285)	210	210	1XB7322-P05	210	6SL3320-1TE32-1AA3
1PH8286-1.C2...	94.8			320	320	1XB7700-P02	380	6SL3320-1TE33-8AA3
1PH8286-1.D2...	96.0			460	460	1XB7700-P02	490	6SL3320-1TE35-0AA3
1PH8288-1.B2...	92.5	6.29 (55.67)	1750 (3859)	260	260	1XB7700-P02	260	6SL3320-1TE32-6AA3
1PH8288-1.C2...	95.2			400	400	1XB7700-P02	490	6SL3320-1TE35-0AA3

Format:

Booksize
Chassis1
3

Cooling:

Internal air cooling
External air cooling0
1

Motor Module:

Single Motor Module

1

1) Speed data are based on an infeed with Active Line Module (see characteristic curves); the maximum speed of the encoders must be observed.

2) Bearing version for Standard (14th data position B to D).

3) Bearing version for Performance (14th data position L).

4) n_2 : max. permissible thermal speed at constant output or speed, which is at the voltage limit when $P = P_{\text{rated}}$.

5) Compliance with the rated pulse frequencies is essential; the rated motor data is valid for 4 kHz or 2 kHz.

6) The rated output current of the Motor Module is lower than the rated motor current at 4 kHz or 2 kHz.

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors – Order No. supplement SH 80/SH 100/SH 132/SH 160 – Forced ventilation/Water cooling

Selection and ordering data

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
Shaft height 80	1	P	H	8	0	8	.	–	1	■	.	■	■	–	■	■	■	1	–	Z		
Shaft height 100	1	P	H	8	1	0	.	–	1	■	.	■	■	–	■	■	■	1	–	Z		
Shaft height 132	1	P	H	8	1	3	.	–	1	■	.	■	■	–	■	■	■	1	–	Z		
Shaft height 160	1	P	H	8	1	6	.	–	1	■	.	■	■	–	■	■	■	1	–	Z		
Overall length																						
Asynchronous version without brake									1													
Encoder systems for motors <u>without</u> DRIVE-CLiQ interface																						
Without encoder										A M T L E												
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R) ¹⁾																						
Incremental encoder sin/cos 1 V _{pp} 512 S/R without C and D tracks (encoder IN512S/R) ²⁾																						
Incremental encoder sin/cos 1 V _{pp} 256 S/R without C and D tracks (encoder IN256S/R) ³⁾																						
Absolute encoder 2048 S/R, 4096 revolutions multi-turn, with EnDat interface (encoder AM2048S/R) ¹⁾																						
Encoder systems for motors <u>with</u> DRIVE-CLiQ interface ⁸⁾																						
Incremental encoder 22 bit (resolution 4194304, internal 2048 S/R) + commutation position 11 bit (encoder IC22DQ) ¹⁾										D												
Incremental encoder, 20 bit (resolution 1048576, internal 512 S/R) ²⁾ without commutation position (encoder IN20DQ)										U												
Incremental encoder, 19 bit (resolution 524288, internal 256 S/R) without commutation position (encoder IN19DQ) ³⁾										V												
Absolute encoder 22 bit + 12 bit multi-turn (encoder AM22DQ) ¹⁾										F												
Rated speed (winding version)																						
Cooling		Degree of protection																				
Forced ventilation DE → NDE		IP55											0									
Forced ventilation NDE → DE		IP55											1									
Water cooling		IP65											2									
Type of construction																						
IM B3 (IM V5, IM V6)																	0					
IM B5 (IM V1, IM V3) (not possible with SH 160 and 14th data position L or M)																	2					
IM B35 (IM V15, IM V35) (only possible for 1PH810/1PH813/1PH816)																	3					
Shaft extension DE				Balancing																		
Plain shaft				–													0					
Feather key (not possible with 14th data position M)				Full-key													1					
Feather key (not possible with 14th data position M)				Half-key													2					
Plain hollow shaft ³⁾				–													3					
Bearing version				Vibration severity acc. to Siemens ⁴⁾ /EN 60034-14				Shaft and flange accuracy														
Standard				R/A				R									B					
Standard				S/A				R									C					
Standard				SR/A				R									D					
Performance ⁵⁾⁶⁾				SPECIAL/B				SPECIAL									L					
High Performance ⁶⁾⁷⁾				SPECIAL/B				SPECIAL									M					
Advanced Lifetime ⁹⁾				S/A				R									Q					
Power connection (DE view)				Cable entry				Signal connection														
Terminal box top				Right				DE										A				
Terminal box top				Left				DE										B				
Terminal box top				NDE				Left										C				
Power connector top ⁸⁾¹⁰⁾				Right				DE										E				
Power connector top ⁸⁾¹⁰⁾				Left				DE										F				
Power connector top ⁸⁾¹⁰⁾				NDE				Left										G				
Power connector top ⁸⁾¹⁰⁾				DE				Right										H				
Version status																			1			
Special version (order codes are required for options)																						

¹⁾ Limited to $n_{\max} = 12000$ rpm.

²⁾ Limited to $n_{\max} = 15000$ rpm.

³⁾ Only possible with 14th data position L or M and 9th data position L or V.

⁴⁾ For definition of the vibration severity according to Siemens, see 1PH8 Motors Configuration Manual.

⁵⁾ For 1PH808 limited to $n_{\max} = 15000$ rpm.
For 1PH810 limited to $n_{\max} = 12000$ rpm.
For 1PH813 limited to $n_{\max} = 10000$ rpm.
For 1PH816 limited to $n_{\max} = 9000$ rpm.

⁶⁾ With 1PH816 not possible with 12th data position 2 (IM B5 type of construction).

⁷⁾ For 1PH808 limited to $n_{\max} = 20000$ rpm. For 1PH810 limited to $n_{\max} = 18000$ rpm. For 1PH813 limited to $n_{\max} = 15000$ rpm. For 1PH816 limited to $n_{\max} = 10000$ rpm.

⁸⁾ Not possible with 10th data position S (star delta circuit).

⁹⁾ For 1PH808/1PH810 limited to $n_{\max} = 5000$ rpm.
For 1PH813 limited to $n_{\max} = 4500$ rpm.
For 1PH816 limited to $n_{\max} = 4000$ rpm.

¹⁰⁾ For 1PH810, power connector is only possible up to a maximum stall current of $I_0 = 36$ A.
For 1PH813, power connector is only possible up to a maximum stall current of $I_0 = 85$ A. Power connector not possible for 1PH816.

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors – Order No. supplement
SH 180/SH 225/SH 280 – Forced ventilation/Water cooling

Selection and ordering data

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																
Shaft height 180	1	P	H	8	1	8	.	–	1	■	.	■	■	–	■	■	■	1	–	Z												
Shaft height 225	1	P	H	8	2	2	.	–	1	■	.	■	■	–	■	■	■	1	–	Z												
Shaft height 280 (Only water cooling)	1	P	H	8	2	8	.	–	1	■	.	2	■	–	■	■	■	1	–	Z												
Overall length																																
Asynchronous version without brake											1																					
Encoder systems for motors without DRIVE-CLiQ interface											A M E																					
Without encoder																																
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)																																
Absolute encoder 2048 S/R, 4096 revolutions multi-turn, with EnDat interface (encoder AM2048S/R)											D F																					
Encoder systems for motors with DRIVE-CLiQ interface																																
Incremental encoder 22 bit (resolution 4194304, internal 2048 S/R) + commutation position 11 bit (encoder IC22DQ)																																
Absolute encoder 22 bit + 12 bit multi-turn (encoder AM22DQ)																																
Rated speed (winding version)																																
Cooling											Degree of protection																					
Forced ventilation DE → NDE											IP55										0											
Forced ventilation NDE → DE											IP55										1											
Water cooling											IP55										2											
Type of construction																																
1PH818			1PH822			1PH828																										
• IM B3 (IM B6/IM B7/IM B8/IM V6)			• IM B3 (IM B6/IM B7/IM B8/IM V6)			• IM B3 (IM V6)																										
• IM V5			• IM V5			• IM V5 ⁴⁾																										
• IM B5 with A450 flange (IM V3) ¹⁾			• IM B5 with A550 flange (IM V3) ²⁾			• IM B5 with A660 flange (IM V3) ³⁾⁴⁾																										
• IM B35 with A450 flange (IM V35)			• IM B35 with A550 flange (IM V35)			• IM B35 with A660 flange (IM V35)																										
• IM V15 with A450 flange			• IM V15 with A550 flange			• IM V15 with A660 flange ⁴⁾																										
Shaft extension DE											Balancing																					
Plain shaft											–										0											
Feather key											Full-key										1											
Feather key											Half-key										2											
Bearing version											Vibration severity acc. to Siemens ⁵⁾ /EN 60034-14										Shaft and flange accuracy											
Standard											R/A										R					B E F						
Increased radial forces											A										N											
Increased radial forces											R/A										R											
Also possible with 1PH818/1PH822:																																
Standard											S/A										R					C D L						
Standard											SR/A										R											
Performance ⁶⁾											SR/A										R											
Power connection (DE view)											Cable entry										Signal connection											
Terminal box top											Right										DE					A B C D						
Terminal box top											Left										DE											
Terminal box top											NDE										Right											
Terminal box top											DE										Right											
Version status																										1						
Special version (order codes are required for options)																																

1) Limited to $n_{\max} = 3000$ rpm. Not possible with 14th data position L (Performance bearing).2) Limited to $n_{\max} = 2500$ rpm. Not possible with 14th data position L (Performance bearing).3) Limited to $n_{\max} = 2000$ rpm. Not possible with 14th data position L (Performance bearing).

4) Only possible with 14th data position B (Standard bearing).

5) For definition of the vibration severity according to Siemens, see 1PH8 Motors Configuration Manual.

6) For 1PH818 limited to $n_{\max} = 7500$ rpm. Not possible with 12th data position 2 (IM B5 type of construction).
For 1PH822 limited to $n_{\max} = 6000$ rpm. Not possible with 12th data position 2 (IM B5 type of construction).

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors – Order No. supplement SH 280 – Forced ventilation

Selection and ordering data

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16							
Shaft height 280 (Only forced ventilation)	1	P	H	8	2	8	.	-	1	■	.	1	■	-	■	■	■	1	-	Z			
Overall length																							
Asynchronous version without brake								1															
Encoder systems for motors without DRIVE-CLiQ interface																							
Without encoder									A M E														
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D tracks (encoder IC2048S/R)																							
Absolute encoder 2048 S/R, 4096 revolutions multi-turn, with EnDat interface (AM2048S/R encoder)																							
Encoder systems for motors with DRIVE-CLiQ interface																							
Incremental encoder 22 bit (resolution 4194304, internal 2048 S/R) + commutation position 11 bit (encoder IC22DQ)									D F														
Absolute encoder 22 bit + 12 bit multi-turn (encoder AM22DQ)																							
Rated speed (winding version)																							
Cooling		Degree of protection																					
Forced ventilation		IP55																					
Type of construction																							
IM B3 (IM V6)		0																					
IM V5 ¹⁾		1																					
IM B35 with A660 flange (IM V35)		3																					
IM V15 with A660 flange ¹⁾		5																					
Shaft extension DE		Balancing																					
Plain shaft		–																					
Feather key		Full-key																					
Feather key		Half-key																					
Bearing version		Vibration severity acc. to Siemens ²⁾ /EN 60034-14								Shaft and flange accuracy													
Standard		R/A								R													
Increased radial forces		A								N													
Increased radial forces		R/A								R													
Power connection (DE view)		Cable entry		Signal connection		External fan NDE Air inlet from NDE, air-flow direction NDE → DE																	
Terminal box NDE right		Bottom		DE		Top		(order code G00 required)										U		–		Z	
Terminal box NDE left		Bottom		DE		Top		(order code G02 required)										V		–		Z	
Terminal box NDE top		Right		DE		Left		(order code G00 required)										W		–		Z	
						Right		(order code G02 required)										W		–		Z	
Terminal box DE top ³⁾		Right		NDE		Top ³⁾⁴⁾												X					
						Left ³⁾		(order code G00 required)										X		–		Z	
						Right ³⁾		(order code G02 required)										X		–		Z	
Version status		1																					
Special version (order codes are required for options)		Z																					

¹⁾ Only possible with 14th data position B (Standard bearing).

²⁾ For definition of the vibration severity according to Siemens, see 1PH8 Motors Configuration Manual.

³⁾ Only possible with 12th data position 0 (IM B3 type of construction) and 1 (IM V5 type of construction).

⁴⁾ Only possible for assignment with terminal box 1XB7712-P...

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors
Forced ventilation/Water cooling

Options

Order code	Description of option When ordering a motor with options, -Z should be added to the order number. The order code should also be specified for each additional required option. Order codes must not be repeated in plain text in the order.	For use with SIMOTICS M motors		
		Shaft heights 80 to 160	Shaft heights 180 to 280	Shaft height 280 for forced ventilation only (11th data position 1)
A12	Additional PTC thermistor chain for alarm and tripping (Only possible for version with terminal box)	✓	✓	✓
A25	Additional KTY84 temperature sensor as reserve connected to signal terminal strip (Only possible for version with terminal box)	✓	Standard	Standard
G00	External fan NDE left (Possible if 15th data position is U, W or X)	–	–	✓
G02	External fan NDE right (Possible if 15th data position is V, W or X)	–	–	✓
G14	With air filter (Only possible with 10th data position 1)	✓ Only for SH 132 to SH 160	✓	✓
K08	Encoder connector mounted opposite (Not possible if 15th data position is X)	–	✓	✓
K09	Terminal box or power connector NDE <u>on the right</u>	✓ Only for SH 100 ¹⁾ to SH 160	–	–
	Terminal box NDE right, cable entry DE, signal connection <u>top</u> (Possible if 15th data position is A)	–	✓	–
K10	Terminal box or power connector NDE <u>on the left</u>	✓ Only for SH 100 ¹⁾ to SH 160	–	–
	Terminal box NDE left, cable entry DE, signal connection <u>top</u> (Possible if 15th data position is A)	–	✓	–
K16	Second shaft extension (SH 280 $d \times l$: 95 mm (3.74 in) x 170 mm (6.69 in)) (Possible if 9th data position is A or G and 12th data position is 0 or 3)	–	–	✓
K18	Radial shaft sealing ring DE ²⁾	✓	✓	–
K40	Regreasing system, DE and NDE	–	✓ Only for SH 180 and SH 225	Standard
K45	Anti-condensation heating 230 V AC	–	–	✓
K69	Pipe connection with pipe socket NDE <u>right</u> (Only possible with forced ventilation, <u>not</u> for G00 or G02)	–	–	✓
K70	Pipe connection with pipe socket NDE <u>left</u> (Only possible with forced ventilation, <u>not</u> for G00 or G02)	–	–	✓
K71	Pipe connection with pipe socket NDE <u>top</u> (Only possible with forced ventilation, <u>not</u> for G00 or G02)	–	–	✓
K80	Axial pipe connection NDE (Only possible with forced ventilation)	✓	✓ Only for SH 180 and SH 225	Options K69, K70, K71

✓ Option possible

– Options not possible

¹⁾ Not possible with 12th data position 2 (IM B5 type of construction)

²⁾ Only appropriate if oil spray or oil vapor is occasionally deposited on the sealing ring. Radial shaft sealing ring not possible if 14th data position is E, F or L

Main spindle motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors Forced ventilation/Water cooling

Options (continued)

Order code	Description of option When ordering a motor with options, -Z should be added to the order number. The order code should also be specified for each additional required option. Order codes must not be repeated in plain text in the order.	For use with SIMOTICS M motors		
		Shaft heights 80 to 160	Shaft heights 180 to 280	Shaft height 280 for forced ventilation only (11th data position 1)
K83	Rotation of the terminal box by + 90° (possible in combination with options K09 or K10 or if 15th data position is U, V or W)	–	✓ 4)	✓
K84	Rotation of the terminal box by - 90° (possible in combination with options K09 or K10 or if 15th data position is U, V or W)	–	✓ 4)	✓
K85	Rotation of the terminal box by + 180° (possible in combination with options K09 or K10 or if 15th data position is U, V or W)	–	✓	✓
K90	Version with flange size A400 (Possible if 12th data position is 2, 3 or 5)	–	✓ Only for SH 180	–
L00	Replace terminal box (standard) with the next largest terminal box (Note dimension implications in CAD CREATOR.)	–	✓	✓
L27	NDE bearing in insulated version	–	✓ Only for SH 180	Standard
L74	Fan version with IP65 degree of protection ³⁾	✓	–	–
M83	Additional back-off thread on motor feet (Only possible if 12th data position is 0 or 3)	–	–	✓
P00	Undrilled cable entry plate	–	✓	✓ Not for 1XB7820-P00
P01	Cable entry plate 3 x M63 x 1.5	–	✓ Only for 1XB7700-P02 1XB7712-P03	✓ Only for 1XB7712-P03
P02	Cable entry plate 3 x M75 x 1.5	–	✓ Only for 1XB7712-P03	✓ Only for 1XB7712-P01 1XB7712-P03
P03	Cable entry plate 4 x M75 x 1.5	–	–	✓ Only for 1XB7712-P01
P04	Cable entry plate 4 x M63 x 1.5	–	✓ Only for 1XB7712-P03	✓ Only for 1XB7712-P01 1XB7712-P03
V90	1PH7-compatible shaft extension (d x l: 42 mm (1.65 in) x 110 mm (4.33 in) (Note reduced radial forces!))	✓ Only for SH 132	–	–
V92	1PH7184-/1PL6184-compatible shaft extension (d x l: 60 mm (2.36 in) x 140 mm (5.51 in))	–	✓ Only for 1PH8184	–
	Paint finish (anthracite RAL 7016)	Standard	Standard	Standard
X01	Paint finish in RAL 9005 (jet black)	✓	✓	✓
X02	Paint finish in RAL 9001 (cream white)	✓	✓	✓
X03	Paint finish in RAL 6011 (reseda green)	✓	✓	✓
X04	Paint finish in RAL 7032 (pebble gray)	✓	✓	✓
X05	Paint finish in RAL 5015 (sky blue)	✓	✓	✓
X06	Paint finish in RAL 1015 (light ivory)	✓	✓	✓
X08	Paint finish in RAL 9006 (white aluminum)	✓	✓	✓
K24	Primer	✓ Pale green	✓ Red brown	✓ Red brown
K23	Special paint finish worldwide (anthracite RAL 7016)	✓	✓	✓
K23 + X..	Special finish worldwide in another color (X01 to X08)	✓	✓	✓
Y64	Hollow shaft prepared for bearingless rotary unions with flange diameter 114 H6	✓	–	–
Y84	Customer specifications on rating plate (max. 30 characters)	✓	✓	✓

✓ Option possible
– Options not possible

³⁾ Regardless of the degree of protection, at high levels of atmospheric pollution, the fan must be cleaned.

⁴⁾ Not possible for 1PH822 and terminal box 1XB7712-P03

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors – Terminal box assignment, max. connectable cross-sections

More information

Terminal box type (See selection and ordering data for assignment)	Cable entry Power	External signals	Max. outer cable diameter ³⁾ mm (in)	Number of main terminals	Max. cross-section per terminal mm ²	Max. rated current ⁴⁾ A
gk803	1 × M25 × 1.5	1 × M16 × 1.5 ¹⁾	20 (0.79)	Phases: 3 × M5 Grounding: 2 × M5	1 × 10	52
gk813	1 × M32 × 1.5	1 × M16 × 1.5 ¹⁾	24.2 (0.95)	Phases: 3 × M5 Grounding: 2 × M5	1 × 16	70
gk823	1 × M32 × 1.5	1 × M16 × 1.5 ¹⁾	24.2 (0.95)	Phases: 3 × M5 Grounding: 2 × M5	1 × 16	70
gk826	1 × M32 × 1.5	1 × M16 × 1.5 ¹⁾	24.2 (0.95)	Phases: 6 × M5 Grounding: 2 × M5	1 × 10	52
gk833	1 × M40 × 1.5	1 × M16 × 1.5 ¹⁾	32 (1.26)	Phases: 3 × M6 Grounding: 2 × M6	1 × 35	110
gk843	1 × M50 × 1.5	1 × M16 × 1.5 ¹⁾	38 (1.50)	Phases: 3 × M6 Grounding: 2 × M6	1 × 50	133
gk846	1 × M50 × 1.5	1 × M16 × 1.5 ¹⁾	38 (1.50)	Phases: 6 × M6 Grounding: 2 × M6	1 × 25	88
gk863	1 × M50 × 1.5	1 × M16 × 1.5 ¹⁾	38 (1.50)	Phases: 3 × M6 Grounding: 2 × M6	1 × 50	133
gk873	1 × M63 × 1.5	1 × M16 × 1.5 ¹⁾	42.6 (1.68)	Phases: 3 × M6 Grounding: 2 × M6	1 × 50	133
1XB7322-P05	2 × M50 × 1.5	1 × M16 × 1.5 ²⁾	38 (1.50)	Phases: 3 × M12 Grounding: 4 × M6	2 × 50	210
1XB7422-P06	2 × M63 × 1.5	1 × M16 × 1.5 ²⁾	53 (2.09)	Phases: 3 × M12 Grounding: 4 × M8	2 × 70	270
1XB7700-P02	3 × M75 × 1.5	1 × M16 × 1.5 ²⁾	68 (2.68)	Phases: 3 × 2 × M12 Grounding: 3 × Fixing eyelet	3 × 150	700

For terminal box type **1XB7700-P02** other cable entries (power) can be ordered via P options, depending on the standard:

P00 Undrilled cable entry plate
P01 Cable entry plate 3 × M63 × 1.5

For terminal box types **1XB7322-P05** and **1XB7422-P06**, another cable entry (power) can be ordered via the P option, depending on the standard:

P00 Undrilled cable entry plate

For options **K09** and **K10**, instead of terminal box **gk863**, terminal box **gk873** is used mounted on the side.

For options **K09** or **K10**, instead of terminal box **gk833**, terminal box **gk843** is used mounted on the side.

For options **K09** and **K10**, instead of terminal box **gk813**, terminal box **gk823** is used mounted on the side.

¹⁾ Thread M16 × 1.5 arranged with 90° to signal connection; thread only for options A12, A25 and 9th data position A (without encoder).

²⁾ Thread M16 × 1.5 arranged opposite to the signal connection (lateral to the cable entry plate); thread only for option A12 and encoder version A (without encoder).

³⁾ Dependent on the design of the metric cable gland.

⁴⁾ Current-carrying capacity based on EN 60204-1/IEC 60364-5-52 with installation type E.